

We claim:

1. A digital eye camera for acquiring digital images of a retinal region of an eye and digital images of a corneal region of the eye, said digital eye camera comprising:
a mounting frame for mounting camera optical elements, said elements comprising:
 - 1) a first combination of optical elements for making said retinal digital images,
and
 - 2) a second combination of optical elements for making said corneal digital images.
2. A camera as in Claim 1, wherein a portion of said first combination of elements and said second combination of elements being shared elements, said shared elements comprising:
 - 1) a first objective element of an objective lens combination,
 - 2) a digital image sensor,
 - 3) at least one eyepiece for viewing either the retina or the cornea, andsaid first combination of elements comprising:
 - 1) a first changeable element of said objective lens system for focusing, in combination with said first objective element, portions or all of said retinal region at or approximately at a common image plane,
 - 2) a retinal illuminating light source,
 - 3) an aperture within said frame and positioned within said first combination to form an effective retinal aperture located at or approximately at the lens of the eye defining an effective retinal aperture position,
 - 4) an infrared camera for determining eye position, and

- 5) an aperture adjustment mechanism for adjusting the effective retinal aperture based on position signals from said infrared camera:

said second combination comprising:

a second changeable element of said objective lens system for focusing, in combination with said first objective element, portions or all of said cornea region at or approximately at a common image plane;

wherein digital images of both the retinal region and the cornea region of the eye may be obtained with said camera.

3. A camera as in Claim 2 wherein said digital image sensor comprises a detector array.
4. A camera as in Claim 3 wherein said detector array is a CCD detector.
5. A camera as in Claim 3 wherein said detector array is a CMOS detector.
6. A camera as in Claim 2 wherein said first combination also comprises a photo sensor for exposure control.
7. A camera as in Claim 1 wherein said first combination also comprises a patterned light source for vision testing.
8. A camera as in Claim 7 wherein said patterned light source comprises an LCD array.
9. A camera as in Claim 7 wherein said patterned light source comprises a mask.
10. A camera as in Claim 2 wherein said retinal illuminating source is a ring source.
11. A camera as in Claim 10 wherein said first combination of elements are arranged so that said ring source is projected onto the lens of said eye but outside said effective retinal aperture.
12. A camera as in Claim 10 wherein said ring light source comprises an LED array.

13. A camera as in Claim 10 wherein said ring light source comprises flashed source chosen from a group of sources consisting of Xenon and Halogen sources.
14. A camera as in Claim 10 wherein said ring light source is programmed to flash in synchronization with operation of said digital image sensor.
15. A camera as in Claim 2 wherein said objective lens defines an objective lens periphery and said first combination also comprises an infrared source mounted outside said periphery.
16. A camera as in Claim 1 wherein said camera comprises at least one tilt mirror programmed to produce stereoscopic images.
17. A camera as in Claim 1 and further comprising a treatment laser beam optics for guiding a treatment laser beam to said retinal region.
18. A camera as in Claim 17 wherein said aperture adjustment mechanism comprises a tilt mirror positioned conjugate with said effective retinal aperture position.
19. A camera as in Claim 18 and further comprising a servo system for stabilizing said treatment laser beam.
20. A camera as in Claim 1 wherein said second combination also comprises a lens set for providing a variety of magnifications.